

MONTANA FISH AND GAME DEPARTMENT  
FISHERIES DIVISION

## JOB PROGRESS REPORT

State Montana  
Project No. F-34-R-5 Title Northwestern Montana Reservoir Investigations  
Job No. II-a Title Hungry Horse Reservoir Study  
Period Covered July 1, 1970 through June 30, 1971

## ABSTRACT

Sampling of the reservoir fish population by gill netting was done in May and October 1970. The average net catch was 24.9 game and 12.3 nongame fish. Species caught included westslope cutthroat trout (Salmo clarki subsp), Dolly Varden (Salvelinus malma), mountain whitefish (Prosopium williamsoni), Arctic grayling (Thymallus arcticus), rainbow trout (Salmo gairdneri), northern squawfish (Ptychocheilus oregonensis), largescale sucker (Catostomus macrocheilus) and longnose sucker (Catostomus catostomus).

Survey information was compiled on the presence or absence of game fish spawning runs from the reservoir into seven tributaries of the South Fork Flathead River.

## BACKGROUND

Hungry Horse Reservoir is a hydroelectric impoundment built in 1952 by the U. S. Bureau of Reclamation. It impounds about 35 miles of the South Fork Flathead River near the town of Hungry Horse, Montana. Its area at full pool is 22,500 surface acres. It contains about 3.5 million acre-feet of storage. Annual draw-down has been about 75 feet and has ranged from 35 to 117 feet.

The South Fork Flathead River Drainage including the reservoir is populated almost entirely with species of fish native to northwestern Montana. Three exotic fishes, rainbow trout, Yellowstone cutthroat trout (Salmo clarki) and Arctic grayling are found in isolated parts of the drainage and rarely in the reservoir.

Research activities and management of the reservoir fish population are aimed at maintaining the native species complex with emphasis on the westslope cutthroat trout. Reservoir population trend data have been collected in 1958, 1960, 1961, 1966, 1968 and 1970. Survey of reservoir tributary streams has been a continuing activity since 1960. Special emphasis has been on road culvert-fish passage problems. Correction of some of these problems has opened about 80 miles of stream to spawning fish.

## OBJECTIVES

Objectives of this job were the collection of data on the fish population for determination of trends in the reservoir and comparison of these trends to reservoir water level manipulations. Streams tributary to the South Fork Flathead River above the reservoir were to be surveyed and presence or absence of spawning runs of game fish from the reservoir noted. Methods to capture large numbers of cutthroat trout in and near the reservoir were to be investigated. A fish population study using mark and recovery techniques is needed to determine spawning habitat in the Bob Marshall Wilderness portion of the South Fork Drainage.

## PROCEDURES

Sampling of Hungry Horse Reservoir to determine fish population trends consisted of setting 8 to 10 overnight bottom gill nets at each of 4 or 5 netting stations. Four netting stations were sampled in May during spring drawdown and five stations were sampled in October when the reservoir was generally near full pool. Fish caught were recorded by net. Lengths, weights and scale samples for age and growth determinations were taken from part of the catch.

Reservoir operational data including inflow, power plant and spill discharge, and reservoir elevation were obtained from the Bureau of Reclamation. These daily data cover the period from 1952 through December 1970. A six-month summary was furnished for January through June 1971. Tables listing reservoir storage and surface area for each five feet of drawdown were also obtained. Correlation of these data with population trend data has not been completed.

Streams tributary to South Fork Flathead River below the Bob Marshall Wilderness Area and above Hungry Horse Reservoir were to be surveyed for presence or absence of spawning runs of game fish resident to the reservoir. These surveys were primitive and included hook-and-line sampling, visual observations and tag-return information. The tag-return information was from fish marked in the mid-1960's. Ten streams of consequence enter the South Fork in this area. Seven of these were surveyed.

Boat-mounted electrofishing gear thought to be suitable for use in the South Fork was tested in Kootenai River.

## FINDINGS

Data were compiled confirming presence or absence of spawning runs of game fish from the reservoir into seven tributaries of the South Fork Flathead River. Upper and Lower Twin Creeks receive spawning populations of westslope cutthroat and Dolly Varden. Spotted Bear River is used for spawning by westslope cutthroat, Dolly Varden and mountain whitefish. Cutthroat and Dolly Varden move as far upstream as Dean Creek falls, a distance of about 15 miles.

Tin and Soldier Creeks receive spawning runs of both cutthroat and Dolly Varden, but access into most of the drainage is blocked by poorly-placed road culverts. The U. S. Forest Service has scheduled replacement of these culverts

by bridges for the summer of 1972. Bruce and Jungle Creeks have small value as spawning streams since almost all of the drainages are blocked to spawning fish by impassible falls within one-half mile of their mouths. It is not known if spawning fish utilize the area below these falls.

In 1970, 70 overnight gill net sets were made in Hungry Horse Reservoir. Catch totalled 82 cutthroat trout, 417 Dolly Varden, 1240 mountain whitefish, 3 grayling, 1 rainbow trout, 447 squawfish, 232 largescale and 182 longnose suckers. The average catch per net night was 37.3 fish of which 24.9 were game and 12.3 nongame fish.

This catch rate is approximately the same as the catch rate of 37.6 fish in 1958. It was similar in both gross numbers and species composition. The drawdown during netting in 1970 was 55 feet compared to only 5 feet in 1958. It is assumed that reducing the volume of water in the reservoir concentrates the fish and the average catch per net would be higher for the same population at the lower water level. On this basis, the 1958 and 1970 data are interpreted to indicate the population was lower in 1970.

Work has been started on comparing gill net catches from Hungry Horse, Noxon Rapids and Cabinet Gorge Reservoirs with amounts of reservoir drawdown. Records of reservoir operation have been obtained from the Bureau of Reclamation and Washington Water Power Company.

#### RECOMMENDATIONS

Identification of spawning tributaries to the reservoir, particularly those in the Bob Marshall Wilderness Area, should continue. A resurvey of streams directly tributary to the reservoir with reference to road culvert-fish passage problems should be done. Biennial sampling of the reservoir's fish population by gill netting should be continued. The next sampling is to be done in May and October 1972.

Prepared by Joe E. Huston

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Waters referred to:

08-8860-05	08-7280-01
08-6660-01	08-3760-10
08-4380-01	08-0920-10
08-6740-01	08-7500-01
08-6560-10	